

AMENDMENTS TO THE CLAIMS

This listing of claims replaces all prior listings of claims.

1. (Previously Amended) A substantially dry and substantially homogeneous anti-microbial powder coating composition comprising particles each of which is a thermosetting polymer powder and each such particle contains an organic biocide, in a concentration of from 0.1 to 20% by weight, whereby the biocide is substantially uniformly distributed throughout the composition.
2. (Previously Amended) A powder coating composition according to Claim 1, wherein the biocide is present in an amount of from 2 to 6% by weight.
3. (Previously Amended) A powder coating composition according to Claim 1 or 2, wherein the biocide is a trichlorohydroxydiphenylether.
4. (Original) A powder coating composition according to Claim 3, wherein the biocide is 2,4,4'-trichloro-2'-hydroxy diphenylether.
5. (Previously Amended) A powder coating composition according to Claim 1 or 2, wherein the biocide is a methylurea.
6. (Original) A powder coating composition according to Claim 5, wherein the biocide is 3-(3,4-dichlorophenyl)-1, 1-dimethylurea.
7. (Previously Amended) A powder coating composition according to Claim 1 or 2, wherein the biocide is an imidazolcarbamate.

8. (Original) A powder coating composition according to Claim 1, wherein the polymer powder has a specific gravity of from 1.2 to 1.9 and a particle size less than 100 microns.

9. (Previously Amended) A powder coating composition according to Claim 1, wherein polymer particles comprise a polyester or epoxypolyester or polyurethane or acrylic or other thermosetting powder.

10. (Previously Amended) A method of distributing an organic biocide substantially uniformly in a thermosetting powder coating composition, the method comprising:

mixing precursors of the thermosetting polymer powder together with the organic biocide in a concentration of 0.1 to 20% by weight and heating the mixture to form a hot mixture;

extruding the hot mixture into sheet form;

granulating the sheet to form granules;

grinding the granules to a powder having the size of particles appropriate to powder coating; and

sieving the powder to less than 100 microns whereby the powder may be sprayed electrostatically.

11. (Original) A method of forming a coating on a metal substrate wherein said coating exhibits anti-microbial activity, the method comprising:

mixing precursors of a thermosetting polymer powder together with particles of an organic biocide to form a mixture and then heating the mixture;

extruding the hot mixture into sheet form;

granulating the sheet to form granules;

grinding the granules to form a powder;

sieving the powder to the size of particles appropriate to electrostatic spraying;

electrostatically spraying the sieved powder on to the metal substrate to form said coating and;

curing the coating to provide said anti-microbial coating on the metal substrate.

12. (Currently Amended) An anti-microbial powder coating composition comprising one or more anti-microbial agents homogeneously dispersed within the particles of a [resin based] polymer powder.

13. (Currently Amended) The composition of Claim 12, wherein the powder coating composition comprises 90 to 99.9% by weight of one or more thermosetting and/or thermoplastic compositions based on epoxy, polyester, [acrylate] acrylic, and/or polyurethane resins as the [resin based] polymer powder and 0.1 to 10% by weight of one or more anti-microbial agents.

14. (Currently Amended) The composition of Claim 12, wherein said one or [ore] more anti-microbial agents further comprise solid anti-microbial agents.

15. (Previously Amended) A method of applying an anti-microbial coating on an article, said method comprising contacting said article with an anti-microbial powder coating composition under conditions sufficient to cause said anti-microbial powder coating composition to adhere to said article, the composition comprising particles each of which is a thermosetting polymer powder and each of which contains an organic biocide, in a concentration of from 0.1 to 20% by weight, whereby the biocide is substantially uniformly distributed throughout the coating.

16. (Previously Amended) A method of applying an anti-microbial coating on an article, said method comprising contacting said article with an anti-microbial powder coating composition under conditions sufficient to cause said anti-microbial powder coating composition to adhere to said article, the composition comprising particles each of which is a thermoplastic polymer and each of which contains an organic biocide, wherein the organic biocide is substantially uniformly distributed throughout the composition at a concentration of 0.1 to 20% by weight of the coating.

17. (Currently Amended) A method of applying an anti-microbial coating on an article, said method comprising contacting said article with an anti-microbial powder coating composition comprising particles under conditions sufficient to cause said anti-microbial powder coating composition to adhere to said article, the each of the particles of the composition comprising 90 to 99.9% by weight of one or more thermosetting and/or thermoplastic compositions based on epoxy, polyester, [acrylate] acrylic, and/or

polyurethane resins as the [resin based] polymer powder and 0.1 to 10% by weight of one or more anti-microbial agents [homogenously] homogeneously dispersed therein.

18. (Currently Amended) A method for preparing an anti-microbial powder coating composition comprising particles, each said particles comprising a polymer powder and an organic biocide, the method comprising the step of mixing an anti-microbial agent into precursors of a polymer powder to obtain a mixture, heating the mixture, preparing granules of the mixture and forming a powder from the granules.

19. (Original) A powder coating composition of claim 1, wherein the biocide comprises a liquid biocide.

20. (Original) The composition of claim 12, wherein the anti-microbial agent comprises a liquid anti-microbial agent.

21. (Original) The composition of claim 12, wherein the anti-microbial agent further comprises N-(trichloromethyl)-thiopthalamide.

22. (Original) The composition of claim 12, wherein the anti-microbial agent further includes 2-bromo-2-nitropropane-1,3-diol.

23. (Currently amended) The composition of claim 22, wherein the 2-bromo-2-nitropropane-1,3-diol concentration is greater than 1 weight percent and less than about 20 weight percent.

24. (Original) The composition of claim 23, wherein the 2-bromo-2-nitropropane-1,3-diol concentration is about 5 weight percent.

25. (Original) The composition of claim 12, wherein the anti-microbial agent further comprises 3,5-dimethyltetrahydro-1,3,5-2H-thiazine-2-thione.

26. (Currently Amended) The composition of claim 25, wherein the 3,5-dimethyltetrahydro-1,3,5-2H-thiazine-2-thione concentration is greater than 1 weight percent and less than about 20 weight percent.

27. (Original) The composition of claim 26, wherein the 3,5-dimethyltetrahydro-1,3,5-2H-thiazine-2-thione concentration is about 5 weight percent.

28. (Currently amended) A method of applying a coating on an article to provide an anti-microbial coating thereon, the method comprising:

electrostatically spraying a coating composition on to said article; and

baking said electrostatically sprayed coating composition on to said article [at a temperature of 140°C to 210°C];

wherein the coating composition comprises particles of a thermoplastic polymer containing a biocide, and said biocide is substantially uniformly distributed throughout the coating composition at a concentration of 0.1 to 20% by weight of the coating composition.

29. (Currently Amended) The method of claim 18 comprising mixing the [polymer precursors] precursors of a polymer powder and the anti-microbial agent into a mixture, heating the mixture, extruding the mixture into sheet form, granulating the sheet to form granules, grinding the granules to a powder and sieving the powder to size.

Cancel claim 30.

Claim 31 (previously cancelled).

Application No. 09/880,556
Reply to Office Action dated July 21, 2003

Claim 32 (previously cancelled).